



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,335	10/17/2005	Werner Knebel	20797/0204644-US0	3451
7278	7590	07/25/2007		
DARBY & DARBY P.C. P.O. BOX 770 Church Street Station New York, NY 10008-0770			EXAMINER GEISEL, KARA E	
			ART UNIT 2877	PAPER NUMBER
			MAIL DATE 07/25/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/537,335	KNEBEL ET AL.	
	Examiner	Art Unit	
	Kara E. Geisel	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 17-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>0605 0206 0706</u> . | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2877

## **DETAILED ACTION**

### ***Preliminary Amendment***

The preliminary amendment filed on June 2<sup>nd</sup>, 2005, has been entered into this application.

### ***Information Disclosure Statement***

The information disclosure statements filed June 2<sup>nd</sup>, 2005, February 21<sup>st</sup>, 2006, and July 11<sup>th</sup>, 2006 have been considered by the examiner.

### ***Claim Objections***

Claims 27-28 are objected to because of the following informalities: minor grammatical errors.

In regards to claim 27, line 2, it appears that --in-- should be placed in between "disposed the" in order to clarify the claim.

In regards to claim 28, line 1, it appears that --the-- should be placed in between "wherein adaptation" in order to clarify the claim.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner

Art Unit: 2877

to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 17-20 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amos (USPN 6,555,811) in view of Baer (USPN 5,866,911).

In regards to claim 17, Amos discloses a scanning microscope (figs. 1-2 and column 3, lines 60-65) for imaging an object, comprising: a light source (11); a spectrally selective detection device (35, 37); an illumination beam path extending from the light source to the object (via 12-16); a detection beam path extending from the object (17) to the detection device (via 16, 15, 18-19, and 24-30), at least one wavelength range of light (31) extending along the detection beam path being detectable using the spectrally selective detection device (35 and 37); a spectrally selective element useable to select light from the light source so as to illuminate the object, the spectrally selective element being useable to mask out of the detection beam path the selected light from the light source reflected or scattered on the object (15 and column 1, line 61 - column 2, line 2); an illumination diaphragm disposed in the illumination beam path (13); and a detection slit diaphragm disposed in the detection beam path (32-33 and column 3, lines 15-18) and configured to detect the light coming from the illumination region from a focal plane so as to provide a confocal slit scanner; wherein at least one of a slit length and a slit width of at least one of the illumination diaphragm and the detection slit diaphragm are variably settable (column 3, lines 11-18). Amos is silent to having the illumination diaphragm be a slit diaphragm configured to generate a linear illumination pattern in a region of the object. However, Amos does disclose the microscope is a confocal scanning microscope (column 1, lines 5-7), and that the illumination diaphragm can be a pinhole configured to generate a spot on the object. This type of diaphragm would require a two-dimensional scan of the specimen in order to image the entire specimen.

Baer discloses a confocal scanning microscope as well (column 2, lines 20-25). In this scanning microscope (fig. 6), the illumination pinhole diaphragm is replaced with a slit diaphragm (60). This is

Art Unit: 2877

done so that the diaphragm is configured to generate a linear illumination pattern in a region of the object and so that the scanning of the object would only have to be done in one dimension instead of two (column 9, lines 27-45), which would increase the scanning speed of the device, and also increase the throughput of the device. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to replace the illumination pinhole diaphragm of Amos with the illumination slit diaphragm of Baer so that the device is configured to generate a linear illumination pattern in a region of the object so that the scanning of the object would only have to be done in one dimension instead of two, therefore increasing scanning speed and throughput of the microscope. Furthermore, since the image of the object returned to the detector in the combined microscope is in the form of a slit image, it would be obvious to replace the detectors of Amos' microscope with the linear detectors of Baer's in order to be able to measure the full slit image.

In regards to claim 18, at least one of the illumination slit diaphragm and the detection slit diaphragm includes a moveably arranged first diaphragm side (Amos 32).

In regards to claim 19, at least one of the illumination slit diaphragm and the detection slit diaphragm includes a moveably arranged second diaphragm side (Amos 33), the first and second diaphragm sides together forming at least one of the illumination slit diaphragm and the detection slit diaphragm (detection diaphragm; Amos fig. 2).

In regards to claim 20, the microscope further comprises a variable-focus optical system associated with at least one of the illumination slit diaphragm and the detection slit diaphragm and configured to vary at least one of a respective effective slit length and a respective effective slit width of at least one of the illumination slit diaphragm and the detection slit diaphragm (29-30).

In regards to claim 23, the spectrally selective detection device includes: a spectral splitting device configured to spectrally split the light extending along the detection beam path (Amos 28); a selection device (32 and 33) configured to select a first spectral region for detection using a first detector

Art Unit: 2877

of the detection device (35); and a reflecting device (33) configured to reflect at least a part of a non-selected spectral region for detection with a second detector of the detection device (37).

In regards to claim 24, the spectral splitting device includes a prism (Amos 28).

In regards to claim 25, the detection device includes at least one of a flat detector and a linear detector having a spatial resolution corresponding to a respective flat or linear shape of the detector (as disclosed above and Baer column 9, lines 55-63).

Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amos (USPN 6,555,811) in view of Baer (USPN 5,866,911), as applied to claims 17-20 and 23-25 above, and further in view of Engelhardt et al. (USPN 6,510,001).

In regards to claims 21-22, the combined microscope is disclosed above. The combined microscope is silent to having the spectrally selective element be an AOTF or an AOD, however it is disclosed that the spectrally selective element is a chromatic beam splitter (Amos 15 and column 1, line 61-column 2, line 2).

Engelhardt discloses a spectrally selective element (fig. 9, 4,17), which can be used in a confocal scanning microscope (column 1, lines 4-12), like the confocal scanning microscope of the combined system (Amos column 1, lines 6-8). The spectrally selective element is an AOTF or an AOD, and is used as a replacement for a chromatic beam splitter (column 3, lines 16-45). The AOTF or AOD have the advantage over a chromatic beam splitter in that they can be tuned over a range of wavelengths, whereas a beam splitter can only be used at a fixed wavelength (column 1, lines 39-50 and column 3, lines 1-8), therefore allowing multiple ranges of excitation wavelengths to excite the object and multiple ranges of emission wavelengths to be detected with one element. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to replace the spectrally selective element of the combined scanning microscope with the AOTF or AOD of Engelhardt, in order to allow multiple ranges

Art Unit: 2877

of excitation wavelengths to excite the object and multiple ranges of emission wavelengths to be detected with one element.

Claims 26-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amos (USPN 6,555,811) in view of Baer (USPN 5,866,911), as applied to claims 17-20 and 23-25 above, and further in view common practices in the art.

In regards to claim 26, the combined microscope is disclosed above. The combined microscope is silent to having the detector be a CCD element including at least one of a CCD array and a CCD line, however it is disclosed, as discussed above, that the detector is a line detector. The examiner takes Official Notice that common line detectors include CCD arrays and CCD lines, and it would be obvious to use one of these in the combined microscope as the line detector, in order to have a readily available, and relatively inexpensive detector used in the device. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to have the line detector of the combined microscope be a CCD array or a CCD line in order to have a readily available, and relatively inexpensive detector used in the device.

In regards to claim 27, the combined microscope further comprises an adaptation optical system disposed the detection beam path upstream of a detector of the detection device and configured to adapt a spectral region to be detected to a shape of the detector (Amos 34 and 36).

In regards to claim 28, the adaptation optical system is variable (Amos, 34 and 36 are movable, and therefore, variable, as shown by arrows in fig. 2).

In regards to claims 29-30, the combined microscope further comprises a light recombining device disposed in the detection beam path upstream of the detector and configured to generate at least one of a substantially linear and a focused light beam (Amos 30).

In regards to claims 31-32, the light recombining device includes at least one of a lens, a prism, an optical diffraction grating and a hologram (Amos 30).

Art Unit: 2877

In regards to claims 33-34, CCD's (as combined into the microscope above) have read out rate times in the  $\mu$ s and ns ranges, and furthermore, the microscope can be used to perform any test desired by the user, which would include fluorescent lifetime experiments.

In regards to claim 35, the combined system is silent to having the detection device include a detector having an activation unit that allows a time-related activation and deactivation of the detector. However, the Examiner takes Official Notice that this is a common practice within the art so that only measurement light coming from the object is measured by the detector, so that extraneous other signals do not interfere with the measurement. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to include an activation unit that allows a time-related activation and deactivation of the detector in order that only measurement light coming from the object is measured by the detector, and so that extraneous other signals do not interfere with the measurement.

In regards to claim 36, the microscope can be used to perform any test desired, including using the microscope to perform multi-photon excitation of the object and a marker configured to mark the object.

### *Conclusion*

Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice in this Office Action mailed. Applicant must seasonably challenge well known statements and statements based on personal knowledge when they are made by the Board of Patent Appeals and Interferences. In re Selmi, 156 F.2d 96, 70 USPQ 197 (CCPA 1946); In re Fischer, 125 F.2d 725, 52 USPQ 473 (CCPA 1942). See also In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well-known statement is taken to be admitted prior art. In re Chevenard, 139 F.2d 71, 60 USPQ 239



Art Unit: 2877

(CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well-known statement in the next reply after the Office action in which the well-known statement was made.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**Kara E. Geisel**  
**Art Unit 2877**

July 20, 2007